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### **REMARKS**

#### **Pending Claims**

Claims 21, 34, and 40 have been amended to more clearly describe Applicants' invention. In particular, claims 21 and 34 have been amended to specify that the organic group comprises the reaction product of at least one (2-sulfatoethyl)-sulphone group and at least one nucleophile of at least one nucleophilic polymer. Claim 40 has been amended similarly to recite that, in the reaction of the first group, which comprises an organic group comprising at least one electrophile, and the second group, which comprises at least one nucleophile, or vice versa, the nucleophile reacts with the electrophile. Support for this amendment can be found, for example, on page 9, lines 12-20 as well as in the Examples of the present application. In addition, claim 40 has also been amended to add formatting to provide additional clarity. Finally, claims 5-15 and 17-18 have been cancelled, and claims 5-14 and 17-18 have been rewritten as new claims 41-52. No new matter has been added. Thus, claims 21-25, 34, 35, and 40-52 are pending.

#### **Objection to the Claims**

The Final Office Action, in paragraph 3, states that claims 5-15 and 17-18 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. In particular, the Final Office Action states that these claims depend directly or indirectly from claim 40, and this claim is not a "previous claim", as required by the rule. In addition, the Final Office Action also states that claims 14 and 15 fail to further limit the claims from which they depend in that they broaden the group of the second chemical group by adding carboxylic acid and acid chloride to it.

While Applicants believe these claims are in proper dependent form, in order to advance the prosecution of this application, claims 5-15 and 17-18 have been cancelled, and claims 5-14

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and 17-18 have been rewritten as new claims 41-52. Since new claims 41-52 depend directly or indirectly from claim 40, which is a "previous claim", Applicants therefore believe these claims are in proper dependent form and should no longer be objected to.

Furthermore, regarding claim 14, which has been rewritten as new claim 50, this claim does not recite that the second chemical group includes a carboxylic acid group or an acid chloride group, contrary to what is stated in the Final Office Action. Also, regarding claim 15, while Applicants believe this claim is proper, in order to advance the prosecution of this application, this claim has been cancelled, making the objection to this claim moot. Applicants therefore believe these claims also should no longer be objected to.

#### **Non-Statutory Double Patenting**

Claims 5-15, 17-18, 21-25, 34-35, and 40 have been rejected on the grounds of non-statutory obviousness-type double patenting as being unpatentable over claims 1-38 of U.S. Patent No. 6,833,026 (Pahumbo).

In paragraph 3, the Final Office Action states that, although the conflicting claims are not identical, they are not patentably distinct from each other because the patented claims encompass the presently claimed electrophile/nucleophile reaction products and reactive groups within the patented claims, and, as a result, the patented claims fall within the scope of the presently claimed subject matter though the scope is somewhat different than that of the pending claims. Also, in paragraph 3, the Final Office Action states that Applicants' filed terminal disclaimers do not include a terminal disclaimer of this cited patent, and therefore, this rejection is maintained.

In the response filed on February 2, 2008, Applicants respectfully disagreed with this rejection, but, in order to advance the prosecution of this application, Terminal Disclaimers were filed therewith. This included a Terminal Disclaimer for the U.S. Patent No. 6,833,026. However, in reviewing the image file wrapper on PAIR, it appears this particular Terminal Disclaimer was not received. A second copy of the Terminal Disclaimer is filed herewith.

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In view of this filing, Applicants respectfully request that the non-statutory obviousness-type double patenting rejection be withdrawn.

### Rejections of Claims Under 35 U.S.C. § 102

#### Moffatt et al. '257

Claims 5-9, 12-15, 17-18, 21-22, 24, 34-35, and 40 have been rejected under 35 U.S.C. § 102(e) as being anticipated by Moffatt et al. '257 (U.S. Patent No. 6,323,257).

In paragraph 8, the Final Office Action states that Moffatt et al. '257 discloses modified pigment and ink jet ink comprising modified pigment wherein the modified pigment has attached at least one directly attached organic group which is the reaction product of (2-sulfatoethyl)-sulphone group and at least one nucleophilic polymer such as those obtained from ester of acrylic acid (i.e., polyacrylates) and containing polyalkylene glycol. The Final Office Action also points to specific sections of Moffatt et al. '257, stating that these disclose numerous amino and amide containing monomers which fall within the scope of the moieties comprised by the instantly claimed chemical groups 1, 2, and 3, and, therefore, Moffatt et al. '257 anticipates the present claims since the reaction of the (2-sulfatoethyl)-sulphone group and the nucleophilic polymer gives a third chemical group, for example, amine and/or amide groups.

The Final Office Action also discusses each of the Applicants previous arguments as follows:

A) Applicants have argued that Moffatt et al. '257 is not a relevant reference against the present claims given that Moffatt et al. '257 clearly teaches modified pigment which is reaction product of polymerization reaction with attached reactive group (i.e., (2-sulfatoethyl)-sulphone), which is in direct contrast to the present claims that require modified pigment comprising pigment having attached at least one organic group which is the reaction product of at least one (2-sulfatoethyl)-sulphone group and at least one polymer. However, while the Final Office Action acknowledges and agrees that the modified pigment of Moffatt et al. '257

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is prepared by reacting polymer having first chemical group with monomer which is then polymerized, the Final Office Action also states that the end result of Moffatt et al. '257 is the same as presently claimed - i.e., attachment of a nucleophilic polymer to the reactive group that is attached to the pigment - and therefore concludes that, absent evidence of criticality regarding the presently claimed process and given that Moffatt et al. '257 discloses product as presently claimed (i.e., pigment having nucleophilic polymer attached to (2-sulfatoethyl)-sulphone group that is attached to pigment), this reference meets the requirements of the present claims.

B) Applicants have argued that the polymer obtained from ester of acrylic acid and containing polyalkylene glycol, is not a nucleophilic polymer. However, the Final Office Action notes that Moffatt et al. '257 discloses monomers including alkylene glycols and their ethers derived from acrylic and methacrylic acid, which clearly encompass polymer obtained from alkylene glycol, and, polyalkylene glycol is described in the present application as a nucleophilic polymer within the scope of the present claims. Furthermore, the Final Office Action points to other monomers of Moffatt et al. '257 which can be utilized to obtain nucleophilic polymer and states that the reaction of the first chemical group of Moffatt et al. '257 with the second chemical group of Moffatt et al. '257 makes a third chemical group, all of which comprise chemical groups falling within the scope of those of present claim 40. The Final Office Action adds that Moffatt et al. '257 shows an intermediate apparently intended to be formed by the present invention, and this compound, in conjunction with the above cited monomers of Moffatt et al. '257 will necessarily form the same linkage as obtained in the present invention, no probative evidence to the contrary being seen.

C) Applicants have argued that Moffatt et al. '257 does not disclose the modified pigment of the present invention. However, the Final Office Action states that, as discussed above, Moffatt et al. '257 clearly describes, "A modified pigment comprising a pigment having attached at least one organic group, wherein said organic group comprises: the reaction product of at least one (2-sulfatoethyl)-sulphone group and at least one nucleophilic polymer", adding that Applicants' use of "reaction product of a polymerization reaction", which gives the

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instantly claimed polymer nucleophile, "with the attached reactive group", for example, the (2-sulfatoethyl)-sulphone group that is attached to pigment clearly give the claimed pigment of present claim 21, absent any evidence to the contrary. Furthermore, the Final Office Action states that the monomers which are to be polymerized by Moffatt et al. fall within the scope of the second chemical group and the additional second chemical group, recited in present claims 14-15. Specifically, the Final Office Action states that it is not seen that polymers forming in the reaction of Moffatt et al. '257 do not subsequently bond to other pigment particle reactive sites by the presently claimed reactions requiring the second chemical group to be a polymer, and this would be expected to occur necessarily and inherently since the same reactive moieties as those of the instant claims are present during the chemical reaction/polymerization of Moffatt et al. '257.

For these reasons, the rejection of the present claims as being anticipated by Moffatt et al. '257 has been maintained.

Applicants respectfully continue to disagree with this rejection. In reviewing each of the comments provided in the Final Office Action, particularly those in response to Applicants' previous arguments, it appears the rejection can be summarized as i) Moffatt et al. '257 shows a modified pigment which is the reaction product of a pigment having attached a (2-sulfatoethyl)-sulphone group and at least one polymer having a nucleophilic group, which anticipates present modified pigment claim 21 and present ink composition claim 34; and ii) since the first chemical group, second chemical group, and third chemical group of Moffatt et al. '257 fall within the list of groups recited in present claim 40, this reference therefore anticipates present this method claim.

However, Applicants do not believe the present claims are anticipated by Moffatt et al. In particular, as discussed in the present specification, the present invention relates, in part, to a method of making a modified pigment by attaching at least one first chemical group to a pigment and reacting this pigment with a second chemical group to form a pigment having attached a third chemical group. The first chemical group contains at least one nucleophile and the second chemical group contains at least one electrophile, or vice versa, (see page 2, lines

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20-28). Preferably the second chemical group is a polymer (see page 2, lines 28-29 and page 9, lines 21-31), and the present invention further relates to a modified pigment comprising a pigment having attached at least one organic group, which is the reaction product of at least one electrophile and a nucleophilic polymer (see page 2, line 30 to page 3, line 9 and page 11, lines 10-24).

For this method and modified pigment, a variety of different "electrophile" groups, A, and "nucleophile" groups, Z, are disclosed (see, for example, page 7, lines 16-28 and Table 1). Also, the reaction between these groups is also described (see page 9, lines 1-20), and this includes the reaction  $A+Z$ , which is the reaction of the electrophile and the nucleophile. Thus, it is clear that the present invention relates to the reaction of nucleophiles and electrophiles of the first chemical and the second chemical group, and, more particularly, to the reaction of an electrophile group and the nucleophile of a nucleophilic polymer.

Therefore, in order to more clearly describe the present invention, claims 21, 34, and 40 have been amended to recite this specific embodiment of the disclosed reaction. Thus, claims 21 and 34, as amended, recite a modified pigment or ink composition comprising the modified pigment, wherein the modified pigment comprises a pigment having attached at least one organic group. The organic group comprises the reaction product of at least one (2-sulfatoethyl)-sulphone group and at least one nucleophile of at least one nucleophilic polymer, which thus recites that it is the nucleophile of the polymer and the (2-sulfatoethyl)-sulphone group that react. Regarding claim 40, this claim has been amended to recite that the first chemical group, which comprises an organic group comprising at least one electrophile, reacts with the second chemical group, which comprises at least one nucleophile, or vice versa, and the nucleophile reacts with the electrophile.

Regarding claims 21 and 34, Applicants believe that the modified pigment particle disclosed in Moffatt et al. '257 is not the modified pigment recited in present claims 21 and 34.

In particular, and as noted in the Final Office Action, Moffatt et al. '257 clearly teaches a modified pigment which is the reaction product of a polymerization reaction with the attached reactive groups (see column 6, lines 13-15). Moffatt et al. '257 teaches that the presence of

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the attached reactive groups allows the polymerization reaction to occur in water (see column 6, lines 7-9). Moffatt et al. '257 also clearly states the reaction is a radical chain polymerization that occurs at the reactive group (see column 6, line 15-18). This is further supported by the extensive list of radical-polymerizable monomers which can be used (see column 6, line 27 to column 16, line 16).

Since a polymerization reaction occurs with the reactive group, the modified pigment of Moffatt et al. '257 is the reaction product of this reactive group (such as a (2-sulfatoethyl)-sulphone group) and either a monomer or the free radical of a growing polymer. Even if the monomer or growing polymer comprises a nucleophile, such as the alkylene glycols and their ethers derived from acrylic and methacrylic acid identified in the Final Office Action, there is no disclosure, teaching, or suggestion anywhere in Moffatt et al. '257 of the reaction of this nucleophile with the (2-sulfatoethyl)-sulphone group. Rather, attachment of polymer or monomer by free radical reaction is shown.

Thus, while, as stated in the Final Office Action and summarized in i) above, Moffatt et al. '257 describes the attachment of a nucleophilic polymer to the reactive group that is attached to the pigment, attachment is not by reaction with the nucleophile of the nucleophilic polymer, as recited in present claims 21 and 34. Therefore, these claims are not anticipated by this reference.

Furthermore, the modified pigment of the reaction described in Moffatt et al. '257 would not be expected to be the same as the modified pigment recited in present claims 21 and 34. In particular, in the present invention, the attached organic group, which comprises the reaction product of at least one (2-sulfatoethyl)-sulphone group and at least one nucleophile of at least one nucleophilic polymer, would be expected to form a polymeric group that is attached at the nucleophilic site of the polymer, and this is discussed in the present application (see page 9, lines 1-20). By comparison, the reaction product of a (2-sulfatoethyl)-sulphone group with a monomer or growing polymer during polymerization, as described in Moffatt et al. '257, would be expected to incorporate the reactive group as the polymer forms. In essence, the (2-sulfatoethyl)-sulphone group would form a vinyl group that would participate in

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the polymerization as a polymerizable monomer. Thus, the polymer would be attached along its backbone, which is formed during the polymerization. This is also true for polymers prepared using monomers having nucleophilic groups - reaction with these monomers occurs by polymerization and would therefore be expected to attach along the polymer backbone and not at the nucleophilic site of the polymer. There is no formation of an organic group which is the reaction product of the recited electrophile and the nucleophile of the polymer in Moffatt et al. '257.

Therefore, the reaction product of a modified pigment having attached at least one (2-sulfatoethyl)-sulphone group and a monomer or growing polymer comprising a nucleophilic group (from Moffatt et al. '257) would be expected to be structurally very different from the reaction product of a modified pigment having attached at least one (2-sulfatoethyl)-sulphone group and at least one nucleophile of at least one nucleophilic polymer (as recited in present claims 21 and 34). In addition, the amount of attached polymer would also be expected to be different since the size of the reacting species (monomer/growing polymer versus nucleophilic polymer) is very different, as are their reactivities (vinyl group reactivity in a radical polymerization versus nucleophilic reactivity with the (2-sulfatoethyl)-sulphone electrophilic group). Also, the size of the attached polymer could also differ, depending, for example, on the extent of polymerization in Moffatt et al. '257.

Therefore, regarding rejection summary i) above, while Moffatt et al. '257 shows a modified pigment which is the reaction product of a pigment having attached a (2-sulfatoethyl)-sulphone group and at least one polymer having a nucleophilic group, the modified pigment described in Moffatt et al. '257 is not the same as the modified pigment recited in claims 21 and 34, based on the specific reaction recited in the present claims as well as on the expected product structure. Applicants therefore believe that claims 21 and 34 are not anticipated by this reference. Furthermore, claims 22 and 24, which depend directly from claim 21, and claim 35, which depends directly from claim 34, each recite further embodiments of the claimed invention and, for at least the reasons discussed above, are also not anticipated by Moffatt et al. '257.



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Finally, regarding claim 40, this claim recites a method of making a modified pigment comprising reacting a pigment having attached a first chemical group with a second chemical group to form a pigment having attached a third chemical group. The first chemical group comprises at least one electrophile and the second chemical group comprises at least one nucleophile, or vice versa, and the nucleophile reacts with the electrophile. The first chemical group, the second chemical group, and the third chemical group each comprise at least one organic group selected from a recited list.

Applicants believe that the method recited in claim 40 is very different from the method described in Moffatt et al. '257. In particular, there is no disclosure, teaching, or suggestion in Moffatt et al. '257 of a reaction of a nucleophile group and an electrophile group. Instead, as discussed in more detail above and also noted in the Final Office Action, Moffatt et al. '257 teaches a very different method in which a modified pigment is formed by a polymerization reaction of either a monomer or a growing polymer with the attached reactive groups, which does not involve a nucleophile group as recited in claim 40.

Therefore, regarding rejection summary ii) above, while the first chemical group, second chemical group, and third chemical groups of Moffatt et al. '257 fall within the list of groups recited in present claim 40, the method described in Moffatt et al. '257 is not the same as the method recited in claim 40 since there is no disclosure, teaching, or suggestion of a reaction of a nucleophile and an electrophile. In fact, a very different reaction is shown, and therefore Applicants believe that claim 40 is not anticipated by this reference. Furthermore, claims 5-9, 12-15, and 17-18 have been cancelled, making the rejection of these claims moot. Claims 5-9, 12-14, and 17-18 have been rewritten as claims 41-45 and 48-52. These claims depend directly or indirectly from claim 40, reciting further embodiments of the claimed invention, and, for at least the reasons discussed above, are also not anticipated by Moffatt et al. '257.

Applicants therefore believe that claims 5-9, 12-15, 17-18, 21-22, 24, 34-35, and 40 are not anticipated by Moffatt et al. '257 and respectfully request that this rejection be withdrawn.

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### Rejections of Claims under 35 U.S.C. § 103

#### Moffatt et al. '257 in view of Moffatt et al. '932

Claims 11 and 25 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Moffatt et al. '257 (U.S. Patent No. 6,323,257) in view of Moffatt et al. '932 (U.S. Patent No. 6,221,932).

In paragraph 10, the Final Office Action incorporates the discussion from paragraph 8 above with respect to Moffatt et al. '257 and states that the difference between this reference and the present claimed invention is the requirement in the claims of specific type of polymer. However, the Final Office Action states that Moffatt et al. '932, which is drawn to ink composition comprising modified pigment, discloses attaching polymer such as polyethyleneimine to pigment in order to produce an ink with increased smearfastness, enhanced print quality, and improved bleed control, and further discloses the equivalence and interchangeability of polyalkylene glycols, as disclosed in Moffatt et al. '257, with polyethyleneimine. The Final Office Action concludes that, in light of the motivation for using specific type of polymer disclosed by Moffatt et al. '932, it would have been obvious to one having ordinary skill in the art to use such polymer in the pigment of Moffatt et al. '257 in order to produce an ink with increased smearfastness, enhanced print quality, and improved bleed control, thereby arriving at the claimed invention. The Final Office Action adds that, where the moieties disclosed by Moffatt are those of the instant claims, they are expected to necessarily and inherently produce compounds falling within the scope of the instant claims, there being no probative evidence that the argued reactions do not necessarily occur during the processing and reacting of the reference.

Applicants respectfully disagree. Claim 25 depends directly from claim 21. Claim 11 has been cancelled, making the rejection of this claim moot, and claim 11 has been rewritten as claim 47, which depends directly from claim 40. As discussed in more detail above, the modified pigment of claim 21 is not the modified pigment disclosed in Moffatt et al. '257 since, while Moffatt et al. '257 describes the attachment of a nucleophilic polymer to the

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reactive group that is attached to the pigment, attachment is not by reaction with the nucleophile of the nucleophilic polymer, as recited in present claim 21. Furthermore, while Moffatt et al. '257 shows a modified pigment which is the reaction product of a pigment having attached a (2-sulfatoethyl)-sulphone group and at least one polymer having a nucleophilic group, the modified pigment described in Moffatt et al. '257 is not the same as the modified pigment recited in claim 21, based on the specific reaction recited in the present claims as well as on the expected product structure. Also, as discussed in more detail above, the method of claim 40 is not the method of preparing the modified pigment of Moffatt et al. '257 since, while the first chemical group, second chemical group, and third chemical groups of Moffatt et al. '257 fall within the list of groups recited in present claim 40, there is no disclosure, teaching, or suggestion in Moffatt et al. '257 of a reaction of a nucleophile and an electrophile. Rather, a very different reaction is shown.

Moffatt et al. '932 cannot overcome the deficiencies of Moffatt et al. '257 since this reference describes a very different product. In particular, as discussed in more detail above, Moffatt et al. '257 clearly teaches a modified pigment which is the reaction product of a polymerization reaction with an attached reactive group (i.e. the reaction of a modified pigment and a monomer or growing polymer). Moffatt et al. '932 discloses a method of making a modified pigment comprising reacting a pigment having attached aromatic ester group with polymer such as polyethylene glycol, polyamine, or polyethyleneimine, and that the reaction occurs by nucleophilic substitution. Therefore, one skilled in the art would not combine these references. The monomers used in Moffatt et al. '257 are not interchangeable with the polymers used in Moffatt et al. '932 and would be expected to form very different products. In addition, the polymers identified from Moffatt et al. '932 are not the types that would be formed by the radical polymerization taught in Moffatt et al. '257.

Even if these references were combined, the resulting combination would not be the modified pigment recited in present claim 21. In particular, if one combined these references, one might be motivated to use the modified pigment having attached aromatic ester group of Moffatt et al. '932 in the polymerization reaction of Moffatt et al. '257. However, as

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discussed in more detail above, a reaction product resulting from polymerization would not be the same as the reaction product recited in present claim 21. Furthermore, this is clearly not the method recited in present claim 40, in which the nucleophile reacts with the electrophile.

Therefore, Applicants believe that claims 21 and 40 are patentable over Moffatt et al. '257 in view of Moffatt et al. '932. Claims 25 and 47, which depend directly from claims 21 and 40 respectively, recite further embodiments of the claimed invention, and, for at least the reasons discussed above, are also patentable over this combination of references.

Applicants therefore believe that claims 11 and 25 are patentable over Moffatt et al. '257 in view of Moffatt et al. '932 and respectfully request that the rejection of these claims be withdrawn.

Moffatt et al. '257 in view of Fuchs et al.

Claims 5-10, 12-15, 17-18, 21-24, 34-35, and 40 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Moffatt et al. '257 (U.S. Patent No. 6,323,257) in view of Fuchs et al. (U.S. Patent No. 3,900,510).

In paragraph 11, the Final Office Action states that Moffatt et al. '257 discloses a method of producing a modified pigment comprising reacting first chemical group such as (2-sulfatoethyl)-sulphone group with second chemical group (i.e., nucleophilic polymer such as polyacrylates containing amine or amide moieties, as discussed in paragraph 8 above, or polyethylene glycol) in order to form third chemical group and identifies the difference between this reference and the present claimed invention as the requirement in the claims that the first chemical group is attached to the pigment using diazonium salt of a specific type of (2-sulfatoethyl)sulphone group. However, the Final Office Action also states that, while Moffatt et al. '257 does not teach the use of the instantly claimed sulfatoethylsulphone group to attach to the pigment, this reference does disclose using diazonium moieties to do so to attach the first chemical group to the pigment. In addition, the Final Office Action states that Fuchs et al. shows that reacting alkaline agent and the sulfuric acid ester or aminobenzylsulfone ethylenesulfonate will give the vinyl aminobenzylsulfone. The Final Office Action therefore

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concludes that it would have been obvious to one of ordinary skill in the art at the time of the instantly claimed invention to use diazonium salt to attach the first chemical group to the pigment of Moffatt et al. '257 using the compound of present claims 5-7 and 23 and to treat this compound with the alkaline compound to arrive at the compound of Moffatt et al. '257, thereby arriving at the claimed invention. The Final Office Action adds that, where the moieties disclosed by Moffatt are those of the instant claims, they are expected to necessarily and inherently produce compounds falling within the scope of the instant claims, there being no probative evidence that the argued reactions do not necessarily occur during the processing and reacting of the reference. The Final Office Action also adds that the complexity and presence of side reactions in such complex mixtures is taught in based undergraduate organic chemistry and is certainly expected by the ordinary skilled artisan.

Regarding Applicants' previous arguments, the Final Office Action states that these have been fully considered by are not persuasive for the reasons stated above and for the reasons stated in paragraph 8 above regarding Moffatt et al. '257, there being no showing of unexpected results commensurate in scope with the cited prior art and the instant claims.

Applicants respectfully disagree. Regarding claims 5-10, 12-15, and 17-18, these claims have been cancelled, making the rejection of these claims moot, and claims 5-10, 12-14, and 17-18 have been rewritten as claims 41-46 and 48-52, which depend directly or indirectly from claim 40. As discussed in more detail above, the method of claim 40 is not the method of preparing the modified pigment of Moffatt et al. '257 since, while the first chemical group, second chemical group, and third chemical groups of Moffatt et al. '257 fall within the list of groups recited in present claim 40, there is no disclosure, teaching, or suggestion in Moffatt et al. '257 of a reaction of a nucleophile and an electrophile. Rather, a very different reaction is shown.

Fuchs et al. cannot cure the deficiencies of the method of Moffatt et al. '257 since this is not related art. Fuchs et al. describes a method of preparing the sulfuric acid ester of 1-aminobenzene-4-( $\beta$ -hydroxyethyl-sulfone)-2-sulfonic acid and the 4-vinylsulfone compound thereof and also states that these compounds may be used as a coupling component in the

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preparation of dyestuffs (see column 3, lines 14-26 and Example 6). However, there is no teaching or suggestion that either of these compounds can or should be used as an attached group on a pigment. Therefore Applicants believe that one having ordinary skill in the art would not be motivated to combine the teachings of Fuchs et al. with the method of Moffatt et al. '257 since this is unrelated art.

Even if these references were combined, the resulting combination would not be the method of present claim 40. In particular, there is no disclosure, teaching, or suggestion in Fuchs et al. of a reaction of the specified compounds with a second group, particularly a nucleophilic or electrophilic group and, more particularly, any of those specified groups recited in claim 40. Thus, if one having ordinary skill in the art were to combine these references, one might be motivated to use the teaching of Fuchs et al. to form the 4-vinylsulfone compound (or, alternatively, as support for the formation of this compound) for use in the polymerization method of Moffatt et al. '257. Clearly, this is not the method of claim 40.

Therefore, Applicants believe that claim 40 is patentable over the combination of Moffatt et al. '257 and Fuchs et al. Furthermore, claims 41-46 and 48-52, which depend directly or indirectly from claim 40, recite further embodiments of the claimed invention and, for at least the reasons discussed above, are also patentable over this combination of references.

Regarding claims 21-24 and 34-35, as discussed in more detail above, the modified pigment recited in claims 21 and 34 is not the modified pigment disclosed in Moffatt et al. '257 since, while Moffatt et al. '257 describes the attachment of a nucleophilic polymer to the reactive group that is attached to the pigment, attachment is not by reaction with the nucleophile of the nucleophilic polymer, as recited in present claims 21 and 34. Furthermore, while Moffatt et al. '257 shows a modified pigment which is the reaction product of a pigment having attached a (2-sulfatoethyl)-sulphone group and at least one polymer having a nucleophilic group, the modified pigment described in Moffatt et al. '257 is not the same as the modified pigment recited in claims 21 and 34, based on the reaction recited in the present

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claims as well as on the expected product structure.

Fuchs et al. cannot cure the deficiencies of the modified pigment of Moffatt et al. '257 since this is not related art. As discussed in more detail above, while Fuchs et al. describes a method of preparing the sulfuric acid ester of 1-aminobenzene-4-( $\beta$ -hydroxyethyl-sulfone)-2-sulfonic acid and the 4-vinylsulfone compound thereof, this reference does not relate to modified pigments. Furthermore, there is no disclosure, teaching, or suggestion in this reference of a reaction product of at least one (2-sulfatoethyl)-sulphone group and at least one nucleophilic polymer. Therefore Applicants believe that one having ordinary skill in the art would not be motivated to combine the teachings of Fuchs et al. with the method of Moffatt et al. '257 since this is unrelated art.

Even if these references were combined, the resulting combination would not be the modified pigment recited in present claims 21 and 34. In particular, as discussed above, since there is no disclosure, teaching, or suggestion in Fuchs et al. of a reaction of the specified compounds with a second group, particularly a nucleophilic or electrophilic group, one having ordinary skill in the art might be motivated to use the teaching of Fuchs et al. to form the 4-vinylsulfone compound (or, alternatively, as support for the formation of this compound) for use in the polymerization method of Moffatt et al. '257. Clearly, this is not the modified pigment recited in claims 21 and 34.

Therefore, Applicants believe that claims 21 and 34 are patentable over the combination of Moffatt et al. '257 and Fuchs et al. Furthermore, claims 22-25, which depend directly from claim 21, and claim 35, which depends directly from claim 34, recite further embodiments of the claimed invention and, for at least the reasons discussed above, are also patentable over this combination of references.

Applicants therefore believe that claims 5-10, 12-15, 17-18, 21-24, 34-35, and 40 are patentable over Moffatt et al. '257 in view of Fuchs et al. and respectfully request that this rejection be withdrawn.

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Moffatt et al. '257 in view of WO 99/31157 and further in view of Moffatt et al. '932

Claims 10-11 and 25 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Moffatt et al. '257 (U.S. Patent No. 6,323,257) in view of WO 99/31175, and further in view of Moffatt et al. '932 (U.S. Patent No. 6,221,932).

In paragraph 12, the Final Office Action states that the difference between Moffatt et al. '257 and the present claimed invention is the requirement in the claims of specific type of polymer. However, the Final Office Action states that Moffatt et al. '932, which is drawn to ink composition comprising modified pigment, discloses attaching a polymer such as polyethyleneimine to pigment in order to produce an ink with increased smearfastness, enhanced print quality, and improved bleed control, and further discloses the equivalence and interchangeability of polyalkylene glycols, as disclosed in Moffatt et al. '257, with polyethyleneimine. The Final Office Action concludes that, in light of the motivation for using specific type of polymer disclosed by Moffatt et al. '932, it would have been obvious to one having ordinary skill in the art to use such polymer in the pigment of Moffatt et al. '257 in order to produce an ink with increased smearfastness, enhanced print quality, and improved bleed control, and thereby arrive at the claimed invention.

Applicants respectfully disagree. As an initial matter, Applicants note that the Final Office Action, in paragraph 12, states that claims 10-11 and 25 are rejected as being unpatentable over Moffatt et al. '257 (U.S. Patent No. 6,323,257) in view of WO 99/31175, as applied to claims 5-10, 12-15, 17-18, 21-24, 34-35, and 40 in paragraph 11 above and further in view of Moffatt et al. '932 (U.S. Patent No. 6,221,932). However, WO 99/31175 is not discussed in paragraph 11 of the Final Office Action. Rather, Fuchs et al. (U.S. Patent No. 3,900,510) is. Since the same claims are referenced from paragraph 11 in the rejection stated in paragraph 12, Applicants have assumed, for the purposes of this response, that the Final Office Action had intended to reject claims 10-11 and 25 over Moffatt et al. '257 in view of Fuchs et al., and further in view of Moffatt et al. '932. If this assumption is incorrect, clarification on the rejection relating to WO 99/31157 is requested.



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Applicants believe that claims 10-11 and 25 are patentable over Moffatt et al. '257 in view of Fuchs et al. and further in view of Moffatt et al. '932. Regarding claims 10-11, these claims have been cancelled, making the rejection of these claims moot, and have been rewritten as claims 46-47, which depend directly or indirectly from claim 40. Regarding claim 25, this claim depends directly from claim 21. As discussed in more detail above, Applicants believe that claims 21 and 40 are patentable over the combination of Moffatt et al. '257 and Fuchs et al.

Moffatt et al. '932 cannot overcome the deficiencies of Moffatt et al. '257 in view of Fuchs et al. since this reference also describes a very different method of preparing a modified pigment. In particular, as discussed in more detail above, Moffatt et al. '932 discloses a method of making a modified pigment comprising reacting a pigment having attached aromatic ester group with polymer such as polyethylene glycol, polyamine, or polyethyleneimine, and that the reaction occurs by nucleophilic substitution. This is therefore also not a polymerization method and, as a result, would not be combined by one skilled in the art with the teaching of the method of Moffatt et al. '257, alone or in view of Fuchs et al. In addition, the polymers identified from Moffatt et al. '932 are not the types that would be formed by the radical polymerization taught in Moffatt et al. '257.

Even if these references were combined, the resulting combination would not be the modified pigment recited in present claim 21 or the method recited in present claim 40. In particular, if one combined these references, one might be motivated to use the modified pigments described in Moffatt et al. '932 in the polymerization reaction of Moffatt et al. '257, further relying on Fuchs et al. for teaching the formation of the 4-vinylsulfone compound. However, clearly this is not the modified pigment or method of the present invention.

Therefore, Applicants believe that claims 21 and 40 are patentable over Moffatt et al. '257 in view of Fuchs et al. and further in view of Moffatt et al. '932. Since claim 25 depends directly from claim 21 and claims 46-47 depend directly or indirectly from claim 40, reciting further embodiments of the claimed invention, Applicants also believe that these claims are therefore also patentable over this combination of references.

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Applicants therefore believe that claims 10-11 and 25 are patentable over Moffatt et al. '257 in view of Fuchs et al. and further in view of Moffatt et al. '932 and respectfully request that the rejection of these claims be withdrawn.

### Conclusion

In view of the foregoing remarks, Applicants believe that this application is in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would further expedite the prosecution of the subject application, the Examiner is invited to call the undersigned.

Respectfully submitted,

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